ComS 425: Homework # 5 — 60 points

Due Tuesday March 20, 2007, in class

Consider the program "checkerboard_err.c" from the gzipped tarball
`http://www.scl.ameslab.gov/~masha/ComS425/comS425hw05.tar.gz` .
As the program name suggests, this program has errors and will not run (although it may compile OK).

1. Fix errors in program source code.
2. Compile and run the program either on `hpc-class` or `borges` for matrix dimensions $n = 2^k,\ k = 10, 15$ and number of processors $p = 1, 2, 4, 9, 16$. Each element of the matrix is defined as $a_{ij} = (i + j) * k,\ 0 < i, j \leq n$ and is a double precision number. Take $b_i = k/i$, also as double precision number. Note that the supporting I/O functions and their declarations are in the MyIO.c and MyIO.h files provided in `comS425hw05.tar.gz`, which should be compiled/included and linked with checkerboard_err.c
3. Submit the following items:
   (a) Listing of your corrected program checkerboard_err.c;
   (b) For *each* k, the following table filled with values

k	# of processors p	Time t_p of execution	Speedup

   (c) Explain your speedup results: Is it linear or superlinear or less than linear? Why?